SEMENENKO, V.

Non-shop structure in action. Prom.koop. 14 no.2:13 F '60.
(MIRA 13:5)

1. Predsedatel' pravleniya arteli "Krasnaya zvezda," g.Stalino.
(Stalino--Clothing industry)

SEMENENKO, V.

Capacity of the corn grading section of the Kishinev Corn Processing Plant has been doubled. Muk.-elev. prom. 27 no.4:10-12 Ap '61. (MIRA 14:7)

1. Glavnyy inzhener Kishinevskogo kombinata khleboproduktov No.2.

(Kishinev—Corn (Maize)—Grading)

SEMENENKO, V.A., inzh.

Improve the quality of planning and installing gas fittings in newly built apartment houses. Gor. khoz. Mosk. 32 no.11:30-31 N '58. (MIRA 11:11)
(Moscow--Gas fitting)

SEMENENKO, V.A., inzh.; LOBANOV, M.B.

Some problems in repairing facades. Gor.khoz.Mosk. 34 no.5:7-8 My '60. (MIRA 13:7)

1. Gorplan Mosgorispolkoma.
(Moscow--Facades)

IVANOV,I.T., kand.tekhn.nauk; KHANIN,G.F.,inzh.; DUMASHOV,Yu.F., inzh.; KOLODEY,A.P., inzh.; IVANOV,V.P., inzh.; VEKSLER,Z.Ya., KUYUKOV,A.A., inzh.; SEMENENKO,V.A., inzh.; VISHNEVETSKIY,I.M., inzh.; SHTREMEL',G.Kh., inzh.; MARCHENKO,V.T., inzh.spets.red.; SMIRNOVA,R.N., red. izd-va; NAZAROVA,A.S.,tekhn. red.

[Technical specifications for conducting and inspecting general and special construction work in the capital repair of apartment houses]Tekhnicheskie usloviia na proizvodstvo i priemku obshchestroitel'nykh i spetsial'nykh rabot pri kapital'nom remonte zhilykh domov. Moskva, 1960. 447 p. (MIRA 15:4)

1. Russia (1917- R.S.F.S.R.)Ministerstvo kommunal'nogo khozyaystva.

(Apartment houses--Maintenance and repair)

IVANOV, I.T., kand.tekhn.nauk; KHANIN, G.F., inzh.; DUMASHOV, Yu.F., inzh.; KOLODEY, A.P., inzh.; IVANOV, V.P., inzh.; VEKSLER, Z.Ya., inzh.; KRYUKOV, A.A., inzh.; SEMENENKO, V.A., inzh. VISHNEVETSKIY, I.M., inzh.; SHTREMEL', G.Kh., inzh.; SMIRNOVA, R.N., red. izd-va; LELYUKHIN, A.A., tekhn. red.

[Technical specifications for carrying out and inspecting general and special construction work during major repairs of residential buildings] Tekhnicheskie usloviia na proizvodstvo i priemku obshchestroitel'nykh i spetsial'nykh rabot pri kapital'nom remonte zhilykh domov. Izd.2., bez izmenenii. Utverzhdeny prikazom Ministerstva kommunal'nogo khoziaistva RSFSR ot 26 aprelia 1960 g. No.118 i soglasovany s Gosudarstvennym komitetom Soveta Ministrov SSSR po delam stroitel'stva. Moskva, Izd-vo M-va kommun.khoz.RSFSR, 1962. 326 p. (MIRA 15:8)

1. Russia (1917- R.S.F.S.R.) Ministerstvo kommunal'nogo khozyaystva.
(Apartment houses—Maintenance and repair)

L 00841-67

ACC NR: AR6011097 SOURCE CODE: UR/0272/65/000/011/0098/0098

AUTHORS: Semenenko, V. A.; Chernikov, N. A.; Koshman, V. I.

TITLE: The BP-1 (II or III) arcproof power supply for the SDK-60-I pressure alarm and the UUZhEK-60-I electric marine-type liquid-level indicator

SOURCE: Ref. zh. Metrologiya i izmeritel'naya tekhnika, Abs. 11.32.821

REF SOURCE: Sb. nauchn. tr. Gos. in-t po proyektir. i issled. vzryvobezopasn. elektrooborud. Giproniselektroshakht, vyp. 2, 1964, 56-58

TOPIC TAGS: power supply, parameter, transformer, electric capacitor, resistor, liquid level indicator, pressure measuring instrument/ BP-1 power supply, UUZhEK-60-I liquid level indicator, SDK-60-I pressure measuring instrument

ABSTRACT: The technical characteristics and the electric circuit of the BP-1 power supply are given. It has a power of 10 va and was designed at the Giproniselektroshakht Institute. The arc protection of each output of the unit is achieved by limiting resistors and shunt capacitors which were experimentally matched for the selected parameters of the transformer. 1 illustration. [Translation of abstract]

SUB CODE: 09

Card 1/1 pb UDC: 389:531.787:681.128

SEMENENKO, V.A.; LOBANOV, M.B.

Economics of capital repair of apartment houses. Gor.khoz.Mosk. 36 no.7:34-36 Jl '62. (MIRA 16:1)
(Apartment houses--Maintenance and repair)

SEMENENKO, V. D.

21-1-9/26

AUTHORS: Pak, V.S., Academician of the Ukrainian Academy of Sciences, and Semenenko, V.D.

TITLE: New High-Efficiency High-Pressure Centrifugal Fans for Mines (Novyye shakhtnyye vysokonapornyye tsentrobezhnyye ventilyatory bol'shoy proizvoditel'nosti)

PERIODICAL: Dopovidi Akademii Nauk Ukrains'koi RSR, 1958, # 1, pp 41-44 (USSR)

ABSTRACT: In 1956, Mining Institute of the Ukrainian Academy of Sciences designed 4 new centrifugal fans with a capacity twice as high as that of the present types. The rotor diameter is 21% smaller and the total weight 40% lighter than the present fans. Other properties will be as follows:

1. Full pressure and the full efficiency factors are equal to those in the best high-pressure centrifugal fans in the USSR;
2. The static pressure and the value of the static efficiency factor are 7% higher.
3. When manufactured, their efficiency factor will be improved and will attain a value not less than 0.76.

Card 1/2

21-1-9/26

New High-Efficiency High-Pressure Centrifugal Fans for Mines

The article contains 2 figures, 2 graphs, and 2 tables.

ASSOCIATION: Institute of Mining (Instytut hirnychoi spravy AN URSR) of the Ukrainian Academy of Sciences

SUBMITTED: 26 March 1957

AVAILABLE: Library of Congress

Card 2/2 1. Fans-Design

GRAKHOVSKIY, B.M.; SEMENENKO, V.P.

Distribution density of particles in a fluidized bed according to the length of their stay in it. Inzh.-fiz. zhur. no.7:20-24 Jl '64. (MIRA 17:10)

1. Filial Instituta teplofiziki AN UkrSSR, Donetsk.

BOGOMOLOV, N.A., inzh.; SEMENENKO, V.D., kand.tekhn.nauk; AYZENSHTEYN, A.P., inzh.

Industrial testing of SVM-6 fans for local ventilation. Ugol' Ukr. 3 no.12:34-36 D '59. (MIRA 13:4)
(Mine ventilation)

L 53867-65 EWT(1)/EWP(m)/EWT(m)/EWA(d)/EPR/EWP(t)/EWP(b)/EWA(1) Pd-1/Ps-4/
Pi-4 JD/WW
ACCESSION NR: AP5017240 UR/0170/64/000/007/0020/0024

AUTHOR: Grakhovskiy, B. M.; Semenenko, V. D. 39 B

TITLE: Particle density distribution with residence time in a fluidized bed 14

SOURCE: Inzhenerno-fizicheskiy zhurnal, no. 7, 1964, 20-24

TOPIC TAGS: fluid mechanics, particle motion

ABSTRACT: A theoretical solution is given for the one-dimensional problem of particle distribution density with residence time in a fluidized bed. It is assumed that the bed moves with constant velocity. The effect of bed motion and the mixing of particles on the uniform treatment of the material is discussed. Graphs of the solution for several arbitrary values of the parameters are given. Orig. art. has: 21 formulas, 1 graph.

ASSOCIATION: Filial Instituta teploenergetiki AN UkrSSR, Donetsk (Institute of Thermal Power Engineering, AN UkrSSR)

SUBMITTED: 22Apr63 ENCL: 00 SUB CODE: NP, ME
NR REF SOV: 007 OTHER: 003 JPRS

Card 1/1

DIKIY, B.F., kand.tekhn.nauk, dotsent; IVASHCHENKO, B.P., assistant; SEMENENKO, V.I., starshiy laborant

New submersible photcrefractometer for the automatic control of evaporation. Trudy OTIPiKhP 9 no.2:143-148 '59. (MIRA 13:9)
(Refractometer) (Densitometers)

SEMENENKO, V.I. [translator]; OSADA, P.A., red.; GERASIMOVA, Ye.S., tekhn. red.

[Organizing work according to the sorting method; planning, regulation and production accounting. Work practice of machinery manufacturing plants in the German Democratic Republic. Translated from the German] Organizatsiia raboty po sortirovochnomu metodu; planirovanie, regulirovanie i uchet proizvodstva. Opyt raboty mashinostroitel'nykh zavodov Germanskoi Demokraticheskoi Respubliki. Moskva, Gosplanizdat, 1961. 111 p. (MIRA 14:8)

1. TSentral'nyy institut tekhnologii i organizatsii mashinostroyeniya. Otdel organizatsii proizvodstva.
(Machine, Accounting) (Germany, East—Machinery industry—Accounting)

BOGUSLAVSKIY, I.Ya., starshiy nauchnyy sotrudnik; BOCHAROV, Yu.G., mladshiy nauchnyy sotrudnik; YENTOV, O.I., mladshiy nauchnyy sotrudnik; BUBLIK, V.I., inzh.; GOLOVANOVA, I.N., inzh.; KHITSUN, V.N., inzh.; SEMENENKO, V.I., inzh.; SHMIDRIK, S.S., inzh.; LEVCHENKO, D.V., otv.red.; CHETYRKIN, M.I., red.; PINEGIN, I.I., red.izd-va; ISLENT'YEVA, P.G., tekhn.red.

[Enlarged machining and time norms for planing and slotting; piece and small lot production] Ukrupnennye normy i normativy vremeni na strogal'nye i dolbezhnye raboty; individual'noe i melkoseriinoe proizvodstvo. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 408 p. (MIRA 14:12)

1. Kharkov. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii proizvodstva i truda chernoy metallurgii.
(Metal cutting)

BOGUSLAVSKIY, I.Ya., starshiy nauchnyy sotr.; BOCHAROV, Yu.G., mlad. nauchnyy sotr.; YENTOV, O.I., mlad. naychnyy sotr.; BUBLIK, V.I., inzh.; GOLOVANOVA, I.N., inzh.; KHITSUN, V.N., inzh.; SEMENENKO, V.L., inzh.; SHMEDRIK, S.S., inzh.; LEVCHENKO, D.V., otv. red.; BURSHTEYN, A.I., red. izd-va; ISLENT'YEVA, P.G., tekhn. red.

[Consolidated norms and time norms for boring work; piece and small lot production] Ukrupnennye normy i normativy vremeni na rastochnye raboty; individual'noe i melkoseriinoe proizvodstvo. Moskva, Metallurgizdat, 1962. 407 p. (MIRA 15:3)

1. Kharkov. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii proizvodstva i truda chernoy metallurgii.
(Drilling and boring--Production standards)

DUBENYUK, V.M., gornyy inzh.; SEMENENKO, V.I., gornyy inzh.; SHABLIY, V.I., gornyy inzh.; KIKOVKA, I.Ye., gornyy inzh.

Aeration of mines by a reactive ventilation equipment. Gor. zhur. no.10:76-77 O '65. (MIRA 18:11)

1. Krivorozhskiy gornorudnyy institut (for Dubenyuk, Semenenko). 2. Novo-Krivorozhskiy gornoobogatitel'nyy kombinat (for Kikovka, Shabliy).

GUNEYEV, G.S., inzh.; SEMENENKO, V.I., inzh.

Introducing mechanical processing of production documentation. Vest.mashinostr. 43 no.8:85-87 Ag '63. (MIRA 16:9)
(Documentation) (Office equipment and supplies)

L 29256-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG/JT

ACC NR: AP6019311 SOURCE CODE: UR/0286/65/000/018/0031/0032

INVENTOR: Kazachkov, I. P.; Dekhanov, N. M.; Gavro, L. P.; Semen'kov, V. I.; Kiselev, Yu. Yu. 31 B

ORG: none

TITLE: Alloy for alloying steel. Class 18, No. 174649

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 31-32

TOPIC TAGS: chromium containing alloy, alloy steel, manganese containing alloy, ferroalloy

ABSTRACT: In order to shorten the alloying period and reduce loss of elements the following alloy and its constituents is proposed: 34-36 Cr, 23-31 Mn, 10-12 Si, 0.8-12 C, balance--iron. [JPRS]

SUB CODE: 11 / SUBM DATE: none

Card 1/1 UDC: 669.15'26'74'782

SEMENENKO, V.M.

Lower Cretaceous sediments of the Konka-Yalin Lowland. Dop. AN URSR no.6:789-792 '61. (MIRA 14:6)

1. Geologorazvedochnyy trest "Kiyevgeologiya." Predstavleno akademikom AN USSR V. G. Bondarchukom [Bondarchuk, V.H.].
(Zaporozh'ye Province—Geology, Stratigraphic)

SEMENENKO, V.M.; SHEREMETA, V.G., [Sheremeta, V.H.]

New data on the time of the formation of Pliocene sediments in the southern part of the Ukraine. Geol. zhur. 23 no.5:80-84 '63.
(MIRA 16:12)

1. Institut geologicheskikh nauk AN UkrSSR i L'vovskiy gosudarstvennyy institut im I.Franko.

SEMENENKO, V.N. [Semenenko, V.M.]; SHEREMETA, V.G. [Sheremeta, V.H.]

Ostracods of the Kuyalnik stage of the Black Sea basin. Dop. AN URSR no.5:637-640 '65. (MIRA 18:5)

1. Institut geologicheskikh nauk AN UkrSSR i L'vovskiy universitet.

KNAPP, Konstantin Konstantinovich; SEMENENKO, V.N., red.; BUTT, V.P., red.izd-va; PYRKINA, N.F., tekhn.red.

[Installation and operation of the flue systems of gas apparatus and appliances] Ustroistvo i ekspluatatsiia dymokhodov ot gazovykh priborov. Moskva, Izd-vo M-va kommun.khoz.RSFSR, 1960. 115 p. (MIRA 14:1)

(Flues) (Gas appliances)

SEMENENKO, V.N.

Perfect handbooks for students of petroleum engineering institutes. Bezop.truda v prom. 4 no.11:37 N '60. (MIRA 13:11)
(Petroleum engineering--Study and teaching)

SEMENENKO, V.Ye.

Chamber with a neutral optical step wedge for plotting light curves of photosynthesis [with summary in English]. Fiziol. rast. 4. no.5: 476-483 S-O '57. (MIRA 10:11)

1. Institut fiziologii rasteniy im. K.A. Timiryazeva AN SSSR, Moskva.
(Botanical apparatus) (Photosynthesis) (Wedges)

SEMENENKO, V.Ye.

Apparatus for studying the induction period of photosynthesis by using a differential thermistor carbon dioxide analyzer. Fiziol. rast. 5 no.6:561-568 N-D '58. (MIRA 11:12)

1. Institut fiziologii rasteniy imeni K.A. Timiryazeva AN SSSR, Moskva.
(Photosynthesis) (Botanical apparatus)

SEMENENKO, V.Ye

SEMENKO, V.Ye.; VLADIMIROVA, M.G.; POPOVA, M.A.

Culture of Chlorella pyrenoidosa in pulsed light. Fiziol. rast. 7 no.4:459-465 '60. (MIRA 13:9)

1. K.A. Timiriazev Institute of Plant Physiology, U.S.S.R. Academy of Sciences, Moscow.
(Algae) (Light--Physiological effect)

83567

17.1153
5.4500

S/020/60/134/001/021/021
B016/B067

AUTHOR: Semenenko, V. Ye.

TITLE: Study of the Mechanism of the Processes of the Induction Period of Photosynthesis With the Aid of the Carbon Radioisotope C^{14}

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 1, pp. 207-210

TEXT: The author gives a critical survey of publications on problems of energetics of photosynthesis, and states that the data available on the kinetics of CO_2 absorption during the induction period of photosynthesis are insufficient to confirm the energetic mechanism suggested by O. Warburg (Ref. 25). In this connection, two problems are important: 1) whether CO_2 is separated after a rapid primary absorption, or whether the specific lowering of the induction curve reflects the termination of the absorption process of CO_2; 2) if, when CO_2 is actually separated, this is done with the absorbed CO_2, or if CO_2 which is separated originates from substances

Card 1/3

83567

Study of the Mechanism of the Processes of the Induction Period of Photosynthesis With the Aid of the Carbon Radioisotope C^{14}

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B016/B067

which were contained before in the plant. The author studied the CO_2 absorption kinetics in sunflower leaves (Helianthus annuus) by using C^{14} in $C^{14}O_2$. The apparatus with an exposure chamber constructed especially for this purpose is described in a paper which is going to be published. A 19.53 cm^2 segment of the leaf was exposed in the chamber after it had been incubated for 12-16 min in air containing a certain amount of $C^{12}O_2$ and $C^{14}O_2$ (Table 1). By carefully selecting the CO_2 total concentration, light intensity, and an object with a sufficiently intensive photosynthesis, the author succeeded in proving (Fig. 2) that the absorption kinetics of $C^{14}O_2$ during the induction period of photosynthesis is described by curves which are similar to those obtained in measuring the induction phenomena in a gas current and by using differential gas analyzers. Thus, the lowering of the CO_2-curve of the photosynthesis induction period after the primary CO_2 absorption does not reflect a temporary inhibition of the CO_2 absorp-

Card 2/3

Study of the Mechanism of the Processes of the Induction Period of Photosynthesis With the Aid of the Carbon Radioisotope C^{14}

S/020/60/134/001/021/021
B016/B067

tion process but the separation of CO_2. The specific lowering of the induction curve of photosynthesis cannot be explained by the inhibiting effect of the CO_2 acceptor. The CO_2 separated is probably the result of oxidation of any product. In this connection, those products are oxidized in which $C^{14}O_2$ was fixed during the preceding CO_2 absorption since the CO_2 separated is also radioactive. The author thanks Professor A. A. Nichiporovich for the supervision of the investigation. There are 2 figures, 1 table, and 27 references: 6 Soviet, 7 US, 2 British, 2 Dutch, 1 German, 1 Czechoslovakian, and 1 French.

ASSOCIATION: Institut fiziologii rasteniy im. K. A. Timiryazeva Akademii nauk SSSR (Institute of Plant Physiology imeni K. A. Timiryazev of the Academy of Sciences, USSR)

PRESENTED: April 21, 1960, by A. L. Kursanov, Academician

SUBMITTED: April 19, 1960

SEMENENKO, V. Ye.

Apparatus for studying transition phenomena of photosynthesis by the use of the radioisotope C^{14}. Fiziol. rast. 8 no.1:129-133 '61. (MIRA 14:3)

1. K.A. Timiriazev Institute of Plant Physiology, U.S.S.R. Academy of Sciences, Moscow.
(Botanical apparatus) (Photosynthesis) (Carbon—Isotopes)

SEMENENKO, V.Ye.; VIADIMIROVA, M.G.

All-Union Conference on the Cultivation of Unicellular Algae.
Fiziol. rast. 8 no.4:518-520 '61. (MIRA 14:11)
(Algae)

SEMENENKO, V.Ye.; VLADIMIROVA, M.G.

Effect of the conditions of space flight in a spaceship on the viability of the Chlorella culture. Probl.kosm.biol. 1:190-204 '62. (MIRA 15:12)

(SPACE FLIGHT--PHYSIOLOGICAL EFFECT)
(ALGAE--CULTURES AND CULTURE MEDIA)

39289
S/216/62/000/002/002/002
I016/I216

AUTHOR: Nichiporovich, A. A., Semenenko, V. E. and Vladimirova, M. G.

TITLE: Intensification of the photosynthetic productivity of a culture of unicellular algae

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya biologicheskaya, no. 2, 1962, 163–172

TEXT: Unicellular algae could be used for food and for regeneration of O_2 in space flights if the photosynthetic productivity of the algal cultures were considerably improved. The present study deals with means of increasing the photosynthetic productivity of such cultures, mainly by increasing the rate of photosynthesis per unit volume of culture. Light is the major factor affecting photosynthetic productivity of dense algal suspensions. However, stronger illumination raises the temperature of the culture slowing down the growth of the mesophilic algae. Experiments with thermophilic algae have shown that with these forms, much higher photosynthetic productivity could be achieved employing higher illumination coefficients. There are 11 figures.

ASSOCIATION: Institut fiziologii rasteniy im. K. A. Timiryazeva, Akademii nauk SSSR (Institute of Plant Physiology im. K. A. Timiryazev, Academy of Sciences USSR)

SUBMITTED: December 8, 1961

Card 1/1

VLADIMIROVA, M.G.; SEMENENKO, V.Ye.; NICHIPOROVICH, A.A.

Comparative study on the productivity of various forms of unicellular algae. Probl.kosm.biol. 2:314-325 '62. (MIRA 16:4)

(ALGAE--CULTURES AND CULTURE MEDIA)

SEMENENKO, V.Ye.; VLADIMIROVA, M.G.; NICHIPOROVICH, A.A.

Some principles of the intensification of the photosynthetic productivity of some cultures of unicellular algae. Probl.kosm. biol. 2:326-339 '62. (MIRA 16:4)
(ALGAE--CULTURES AND CULTURE MEDIA)
(PHOTOSYNTHESIS)

SEMENENKO, V.Ye.; VLADIMIROVA, M.G.

First results of the experiments with Chlorella culture exposed in space on the second spaceship. Isk.sput.Zem. no.12:56-62 '62. (MIRA 15:8)

(Space biology)

SEMENENKO, V.E.; [Semenenko, V.Ye.]; VLADIMIROVA, M.G.

Conditions of the cosmic flight on a satellite ship, and their influence on the viability of the culture of Chlorella. Analele biol 16 no.3:115-122 My-Je '62.

32948

17.1156
27.1110

S/030/62/000/001/009/011
B105/B101

AUTHORS: Semenenko, V. Ye., Nichiporovich, A. A.

TITLE: Installation for investigating algae

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 1, 1962, 77 - 79

TEXT: The interest in algae is connected with their use for biological air regeneration and with the production of additional foodstuff during space flights of man. Research work during the last few years at the laboratoriya fotosinteza Instituta fiziologii rasteniy im. K. A. Timiryazeva Akademii nauk SSSR (Laboratory for Photosynthesis of the Institute of Plant Physiology imeni K. A. Timiryazev of the Academy of Sciences USSR) has shown that active development of water plants can be safeguarded only under the following conditions: intensive lighting by day and night, uninterrupted supply of air enriched with carbon dioxide, intensive air supply, mixing of the suspension, preventing infection of the culture. On this basis, a УИВ-1 (UIV-1) installation (Fig. 2) was designed at this laboratory. It was built by the Tsentral'noye konstruktorskoye byuro Akademii nauk SSSR (Central Design Office of the Academy of Sciences USSR)

Card 1/3

32948

Installation for investigating algae

S/030/62/000/001/009/011
B105/B101

in 1960 - 1961. The installation permits physiological investigations of the growth, development, accumulation of biomass, and photosynthetic productivity of algae. A number of highly productive algae species were cultivated with its help. The effect of light intensity and carbon dioxide concentration on the growth of water plants was investigated. There are 2 figures.

Fig. 2. Principal diagram of the UIV-1 installation.

Legend: (1) compressor with receiver; (2) cocks for fine adjustment of gas supply; (3) rotameters; (4) mixer; (5) outlet valve; (6) culture vessels; (7) cotton-wool filters; (8) humidifiers; (9) cocks; (10) distribution pipes; (11) light source, APN-750 (DRL-750) bulb; (12) reducing valve with thermostat.

Card 2/2

SEMENENKO, V.Ye.

Study of the mechanism of processes determining the kinetic features of CO^2 absorption at the beginning of the induction period of photosynthesis. Fiziol. rast. 11 no.2:216-231 Mr-Ap '64. (MIRA 17:4)

1. Timiriazev Institute of Plant Physiology, U.S.S.R. Academy of Sciences, Moscow.

SEMENENKO, V.Ye.

Characteristics of carbon dioxide metabolism in the transitional states of photosynthesis during the change from light to darkness; light-induced liberation of CO_2. Fiziol. rast. 11 no. 3:375-384 '64. (MIRA 17:7)

1. K.A.Timiryazev Institute of Plant Physiology, U.S.S.R. Academy of Sciences, Moscow.

L 24911-65 EWG(a)/EWG(c)/EWG(j)/EWG(r)/EWG(v)/EWT(l)/FS(v)-3 Pb-4/Pe-5 DD

ACCESSION NR: AR4047771 S/0299/64/000/018/G004/G004

SOURCE: Ref. zh. Biologiya, Svodnyy tom, Abs. 18G26

AUTHOR: Semenenko, V. Ye.

TITLE: Investigation of the mechanism in processes determining the characteristics of carbon dioxide intake kinetics at the beginning of the photosynthesis induction period

CITED SOURCE: Fiziol. rasteniy, v. 11, no. 2, 1964, 216-231

TOPIC TAGS: sunflower, photosynthesis, carbon dioxide, carbon dioxide intake, radioactive carbon

TRANSLATION: Experiments were conducted on sunflower leaves with C^{14} and the use of a device built by the author (Plant Physiology, 1961, 8, 126) and an apparatus with a carbon dioxide differential gas analyzer (Plant Physiology, 1958, 5, 562). Decrease of the carbon dioxide induction curve in photosynthesis, which is observed when the subject is first exposed to illumination after an initial "gulp" of carbon dioxide, takes place as a result of its being expelled back

Card 1/2

L 24911-65
ACCESSION NR: AR4047771

and does not reflect the temporary delay in carbon dioxide intake due to acceptor depletion of carbon dioxide. Carbon dioxide released after the initial "gulp" is a part of the carbon dioxide which was fixed in the preceding moment. Intensity of expelled carbon dioxide constitutes about 61% of the initial intensity intake. Induction losses of photosynthesis were found to increase with higher illumination intensity and higher photosynthesis intensity. According to the author, the kinetic characteristics of transitional photosynthesis phenomena observed during carbon dioxide intake are determined by the combined action of counter directed processes taking place simultaneously, which are related to the mechanisms of energy dismutation and also to carbon dioxide participation in processes producing the "reducing power of photosynthesis." Institute of Plant Physiology AN SSSR, Moscow. Bibliography, 45 titles. G. Grigorutse

SUB CODE: LS ENCL: 00

Card 2/2

L 34550-65 EWG(j)/EWG(r)/EWT(l)/FS(v)-3/EWG(v)/EWG(a)/EWG(c) Pe-5 DD

ACCESSION NR: AR5003957 S/0299/64/000/023/G004/G004

SOURCE: Ref. zh. Biologiya. Sv. t., Abs. 23G16

AUTHOR: Semenenko, V. Ye.

TITLE: Characteristics of carbon dioxide gas exchange in transitional states of photosynthesis with transition from illumination of subject to darkness. Carbon dioxide discharge induced by light.

CITED SOURCE: Fiziol. rasteniy, v. 11, no. 3, 1964, 375-384

TOPIC TAGS: sunflower, carbon dioxide exchange, photosynthesis, light brightness, radioactive carbon

TRANSLATION: In experiments on sunflowers to investigate (with C^{14}) the transitional effects of photosynthesis after light is turned off, the recorded aftereffects induced by light were characterized by intense carbon dioxide discharges lasting 3-5 min after light was turned off. Intensity of the carbon dioxide discharge induced by light correlates with the intensity of photosynthesis at the moment the light was turned off and constitutes approximately 60% of its

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ACCESSION NR: AR5003957

value; /Translator's note: lines 9-13 are apparently incomplete and will not translate clearly./ On the basis of the data obtained, a hypothesis is expressed that carbon dioxide participates in photosynthesis not only as a substrate of carbon nutrition, but also participates in the mechanisms producing the "reducing force" of photosynthesis which functions in cyclical processes. Institute of Plant Physiology AN SSSR, Moscow. Bibliography 27 titles. Author's abstract.

SUB CODE: LS ENCL: 00

Card 2/2

ACC NR: AT6036296 SOURCE CODE: UR/0000/66/000/000/0193/0203

AUTHOR: Filippovskiy, Yu. N.; Semenenko, V. Ye.; Nichiporovich, A. A.

ORG: none

TITLE: Optical properties of a Chlorella suspension during the action of complex radiation spectra

SOURCE: AN SSSR. Nauchnyy sovet po kompleksnoy probleme Fotosintez. Fotosinteziruyushchiye sistemy vysokoy produktivnosti (Photosynthesizing systems of high productivity). Moscow, Izd-vo Nauka, 1966, 193-203

TOPIC TAGS: Chlorella, photosynthesis, mass culture, radiation, optic property

ABSTRACT: The problem of determining the propagation of radiation of complex spectral composition in a Chlorella suspension was discussed. Most researchers studying the propagation of monochromatic radiant fluxes in the photosynthetically active range of wavelengths in flat Chlorella cultivators have supported the hypothesis of the exponential attenuation of radiation in a Chlorella suspension. Quantitative analysis shows this approach to be inexact. Dependences of energy and quantum transmission coefficients of a Chlorella suspension (strain *Chlorella sp. K*) on the optical density and thickness of the cell layer were calculated for radiation spectra of light sources widely used in the mass cultivation of algae. The deep layers of a Chlorella suspension have a greater transparency for fluxes of photosynthetically active radia-

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ACC NR: AT6036296

tion from xenon lamps, incandescent reflector lamps (color temperature = 3000K), and luminescent lamps than do the surface layers of the suspension. Quantitative characteristics of this phenomenon were obtained. The quantum content in an energy unit of photosynthetically active radiation is constant for any elemental volume in a Chlorella cultivator in spite of great differences in the spectral composition of the light. The range of spectral transmission coefficient groups of Chlorella for different cell concentrations and layer thicknesses contains curves like those for leaves of higher plants. The dependence of the phothsynthesis of a Chlorella cell on the density of quantum fluxes obtained for optically thin suspension layers can be used as the basis for calculating the photosynthetic yield of cultivators and for designing apparatus for mass cultivation of algae. Orig. art. has: 4 figures and 5 formulas.

SUB CODE: 06/ SUBM DATE: 25May66/ ORIG REF: 008/ OTH REF: 002/
ATD PRESS: 5106

Card 2/2

ACC NR: AT6036297 SOURCE CODE: UR/0000/66/000/000/0204/0212

AUTHOR: Filippovskiy, Yu. N.; Nichiporovich, A. A.; Semenenko, V. Ye.

ORG: none

TITLE: The distribution of radiant energy in a Chlorella suspension

SOURCE: AN SSSR. Nauchnyy sovet po kompleksnoy probleme Fotosintez. Fotosinteziruyushchiye sistemy vysokoy produktivnosti (Photosynthesizing systems of high productivity). Moscow, Izd-vo Nauka, 1966, 204-212

TOPIC TAGS: chlorella, photosynthesis, ~~chlorella cultivation~~ radiation

ABSTRACT: A method of estimating the intensity of radiant energy in plane-parallel Chlorella cultivators was described. Experiments were conducted with *Chlorella sp. K.*, a thermophilic strain with relatively small cells and evenly distributed chromatophores. Chlorella was cultured at 36C in a cultivator 6 mm thick, illuminated from two sides with luminescent lamps (intensity of photosynthetically active radiation up to $40 \cdot 10^3$ erg/cm^2.sec from each side). Air containing 1.8% CO_2 was bubbled through the suspension at a rate of 200 liters/hr. The cylindrical cultivating tank had mirror ends to eliminate scattering of light through the end walls. The exponential dependence of spectral hemispherical coefficients of transmission of a Chlorella suspension on cell concentration and cell layer thickness was determined for all useful values of cell concentration and layer thickness. (The hemispherical coefficient of transmission τ_σ is defined as the

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ACC NR: AT6036297

ratio of the value of flux F_{τ_0} emanating from the cell layer into half space 2π to the value of flux F_0 incident on the layer surface.) This exponential dependence is satisfied with identical accuracy for all wavelengths in the range of photosynthetically active radiation. Spectral directive coefficients of transmission (flux emanating from the solution in the direction of the flux incident on the surface) show selectivity at cell concentrations above $150 \cdot 10^6$ cells per milliliter. The dependence of spectral directive coefficients of transmission on cell concentration and cell layer thickness conforms to Bouguer's Law only at low cell concentrations. Values of a spectral hemispherical absorption coefficient for *Chlorella sp. K.* were obtained for a wide range of conditions. Experimental results can thus be used to calculate the light span in a Chlorella suspension. Orig. art. has: 5 figures and 10 equations.

SUB CODE: 06/ SUBM DATE: 25May66/ ORIG REF: 012/ OTH REF: 007/ ATD PRESS:5106

Card 2/2

ACC NR: AP6036768 (A,N) SOURCE CODE: UR/0326/66/013/006/0949/0957

AUTHOR: Semenenko, V. Ye.; Zimin, M. B.; Vladimirova, M. G.; Klyachko-Gurvich, G. L.; Sokolov, M. V.; Nichiporovich, A. A.

ORG: Institute of Plant Physiology im. K. A. Timiryazev, Academy of Sciences, SSSR, Moscow (Institute fiziologii rasteniy Akademii nauk SSSR); Institute of Biophysics, Academy of Sciences, SSSR (Institut biofiziki Akademii nauk SSSR)

TITLE: Photosynthetic productivity and efficient utilization of radiant energy in Chlorella as a function of spectral energy distribution in an equal-energy light field

SOURCE: Fiziologiya rasteniy, v. 13, no. 6, 1966, 949-957

TOPIC TAGS: plant metabolism, plant growth, photosynthesis, photosynthetic productivity, photosynthetic active radiation, equal energy field, energy utilization

ABSTRACT: Photosynthetic productivity and the efficiency of utilization of photosynthetically active radiation in Chlorella sp. K were studied as a function of spectral energy distribution in an equal-energy field. Evaluation was based on the biomass increase, productivity, biosynthesis of nitrogen compounds, and other factors. An equal-energy light field with an intensity of $32 \cdot 10^3$ erg/cm^2·sec was obtained by means of ND-2 neon-arc lamps and L-30 "blue" fluorescent lamps. The

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ACC NR: AP6036768

balance between "blue" (380—535 mμ) and "red" (610—710 mμ) light could be varied at will. It was found that as the spectral composition was shifted from short to long wavelengths (i.e. from "blue" to "red") within the photosynthetically active range, the growth and development rates, and photosynthetic productivity and efficiency of energy utilization increase, while the amount of nitrogen compounds decreases during prolonged cultivation of Chlorella suspensions. The highest productivity and energy utilization efficiency were observed with 80% "red," 7.5% "blue," and 12.5% intermediate range (535—610 mμ) radiation. This increase in productivity and efficiency resulting from a shift of radiation blaance in the "red" direction is explained by the increase in the number of photons per unit of energy occurring with the increase of wavelength. This may indicate that the growth and development of algae in the energy distribution variants of the present experiment were not limited by photocatalytic systems, and that productivity was completely determined by the photosynthetic process. Orig. art. has: 1 table and 4 figures.[BM]

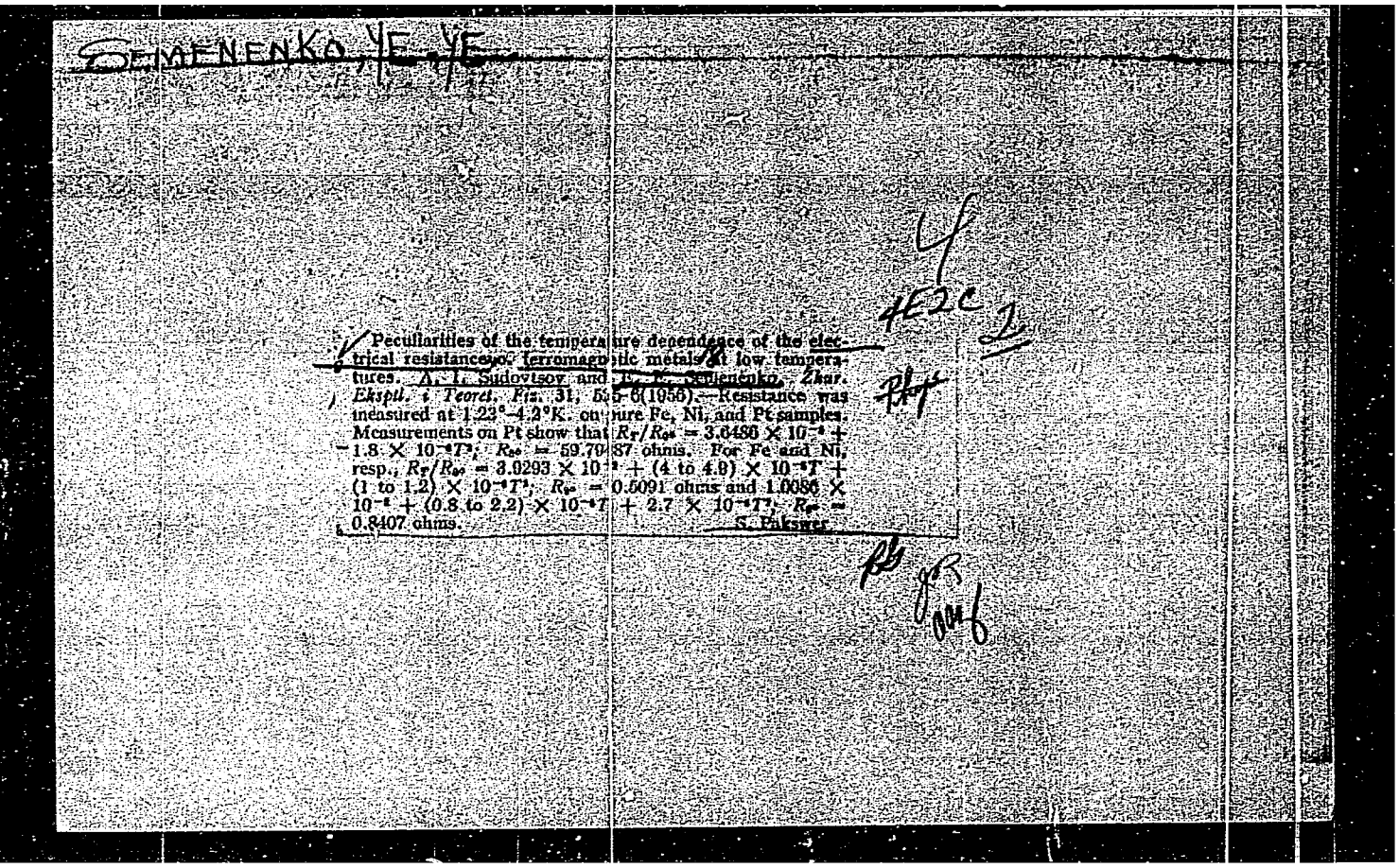
SUB CODE: 06/ SUBM DATE: 22Sep65/ ORIG REF: 013/ OTH REF: 010/
ATD PRESS: 5109

Card 2/2

SEMENENKO, Ya.P., dots.

Determining the bearing capacity of a concrete core placed in a solid steel yoke. Bet. i zhel.-bet. no.3:125-129 Mr '60. (MIRA 13:6)

(Strains and stresses) (Reinforced concrete--Testing)



SEMENENKO, YE. YE.

Peculiarities of the temperature dependence of the electrical resistance of ferromagnetic metals at low temperatures. A. I. Sudovtsov and Ye. Ye. Semenenko. *Zhur. Eksptl. i Teoret. Fiz.* 31, 525-6(1956).—Resistance was measured at 1.23°–4.2°K. on pure Fe, Ni, and Pt samples. Measurements on Pt show that $R_T/R_{0°} = 3.0480 \times 10^{-3} + 1.8 \times 10^{-4}T^2$; $R_{0°} = 59.7087$ ohms. For Fe and Ni, resp., $R_T/R_{0°} = 3.9293 \times 10^{-3} + (4 \text{ to } 4.8) \times 10^{-4}T + (1 \text{ to } 1.2) \times 10^{-4}T^2$; $R_{0°} = 0.5091$ ohms and $1.0086 \times 10^{-3} + (0.8 \text{ to } 2.2) \times 10^{-4}T + 2.7 \times 10^{-4}T^2$; $R_{0°} = 0.8407$ ohms. S. Paksuev

SEMENENKO, Ye. Ye.

"The Influence of the Domain Structure on the Electrical Conductivity of Very Pure Iron."

paper presented at the All-Union meeting on Magnetic Structure of Ferromagnetics June 1958, in Krasnoyarsk. Meeting sponsored by Inst. of Physics, Acad. Sci. USSR, and Comm. for Magnetism, Dept Phys-Math Sci, AS USSR,

Physico-Tech. Inst, AS Ukr SSR, Khar'kov

AUTHORS: Sudovtsov, A. M., Semenenko, Ye. Ye. SOV/56-35-1-56/59

TITLE: The Influence of the Domain Structure on the Electric Resistance of Iron at Low Temperatures (Vliyaniye domennoy struktury na elektrosoprotivleniye zheleza pri nizkikh temperaturakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 35, Nr 1, pp. 305 - 307 (USSR)

ABSTRACT: The authors measured the electric resistance of iron as a function of the longitudinal and of the transverse magnetic fields for the temperature interval between room temperature and that of liquid helium. The magnetization temperatures were obtained for the same temperatures. A sample of very pure iron was used for these investigations. It was 38 mm long and its transverse dimensions amounted to 0,1 mm; the grain dimensions are approximately equal to the diameter of the sample. The results of the measurements are given in 2 figures. The variation of the relative electric resistance $\Delta R/R$ is plotted against the external field. There is $\Delta R = R_H - R$ where R denotes the electric resistance

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The Influence of the Domain Structure on the Electric Resistance of Iron at Low Temperatures SOV/56-35-1-56/59

without electric field and R_H - the resistance in the magnetic field. In a longitudinal magnetic field of ~10 Örsted at 300°K an increase of the electric resistance (~ 0,02 %) is observed, but at 77°K the electric resistance is diminished by ~ 0,2 % and at the temperature of liquid helium it is diminished by 30%. The main effect, i.e. a decrease of the electric resistance is observed in the region of the technical magnetization of the sample. This may be explained by 2 facts: Firstly, by an intensification of the domain structure by the magnetization process (that is, by a decrease of the boundary numbers) and also by a rotation of the magnetic moment of the domains in the direction of the external magnetic field. From the above mentioned results the value $\lambda = 10^{-3}$ cm for the free path length may be obtained. This value coincides with the estimated thickness of the domain for the discussed specimens in the demagnetized state. In a transverse magnetic field there are 2 effects: an intensification of the domain structure (a decrease of the electric resistance in weak fields) and the usual galvanomagnetic

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effect which prevails in strong fields. The authors observed an influence of the measuring current on the electrical resistance. This resistance grew 20% when the measuring current was increased from 0,1 to 1000 mA. The authors thank B.G.Lazarev, S.V.Vonsovskiy, and M.I. Kaganov for the discussion of results and for their interest in this paper. There are 2 figures and 8 references, 4 of which are Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physico-technical Institute of the AS Ukrainskaya SSR)

SUBMITTED: April 21, 1958

Ye. YA. SEMENENKO

21(0) SOV/53-67-4-7/7

AUTHOR: Chentsov, R.

TITLE: The Fifth All-Union Conference on the Physics of Low Temperatures (5-ye Vsesoyuznoye soveshchaniye po fizike nizkikh temperatur)

PERIODICAL: Uspekhi fizicheskikh nauk, 1959, Vol 67, Nr 4, pp 743-750 (USSR)

ABSTRACT: This Conference took place from October 27 to November 1 at Tbilisi; it was organized by the Otdeleniye fiziko-matematicheskikh nauk Akademii nauk SSSR (Department of Physico-mathematical Sciences of the Academy of Sciences, USSR), the Akademiya nauk Gruzinskoy SSR (Academy of Sciences, Gruzinskaya SSR), and the Tbilisskiy gosudarstvennyy universitet im. Stalina (Tbilisi State University imeni Stalin). The Conference was attended by about 300 specialists from Tbilisi, Moscow, Khar'kov, Kiyev, Leningrad, Sverdlovsk, and other cities as well as by a number of young Chinese scientists at present working in the USSR. About 50 lectures were delivered which were divided according to research fields.

. IV. Magnetism. A. S. Borovik-Romanov (IFP) delivered a report on investigations he carried out of the anisotropy of the weak ferromagnetism in monocrystal samples of the antiferromagnetic $MnCO_3$ (the effect of anisotropy was predicted by the thermodynamical theory developed by Dzyaloshinskiy). In the course of the discussion R. A. Alikhanov (IFP) spoke about neutronographical investigations he carried out of the magnetic structure of $MnCO_3$ and $FeCO_3$ at low temperatures. P. L. Kapitsa stressed the importance of the method based upon Dzyaloshinskiy's theory. N. M. Kreynes (VNIIFTRI), whose lecture was read by A. S. Borovik-Romanov, reported on measurements carried out by him (in the IFP) of the magnetic anisotropy of the antiferromagnetic $CuSO_4$- and $CoSO_4$-monocrystals.

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Ye. A. Turov (IFM AN SSSR, Sverdlovsk) spoke about his theoretical investigations of the magnetizability, the susceptibility, the specific heat, and the resonance frequencies of antiferromagnetics and weak ferromagnetics. A. I. Sudovtsov and Ye. Ya. Semenenko (KhFTI) spoke about measurements of the electric resistance of iron in magnetic fields in a wide temperature range with simultaneous plotting of the magnetization curve. N. V. Vol'kenshteyn, G. V. Fedorov, E. V. Galoshina and M. I. Turchinskaya (IFM AN SSSR) spoke about measurements of magnetization and the Hall effect of polycrystalline samples, nickel and Ni_3Mn at low temperatures. Ye. I. Kondorskiy, V. Rode, U. Gofman and Chang, Shou-ch'un (MGU) gave a report on susceptibility measurements on nickel and its alloys with copper at low temperatures; T. I. Sanadze (TGU) spoke about the spectrum of the paramagnetic resonance of Tb^{3+} in terbium nitrate at temperatures of liquid hydrogen. M. I. Kaganov and V. M. Tsukernik (KhFTI) dealt with the kinetic phenomena in ferromagnetics at low temperatures and with calculation of relaxation time; A. I. Akhiyezer, V. Bar'yakhtar and S. Peletminskiy (KhFTI) carried out a theoretical investigation of the relaxation of the magnetic moment in ferrodielectrics; Vlasov (IFM AN SSSR) showed that a linearly polarized elastic (ultrasonic) wave of a frequency of 10^9 cycles when passing through a ferromagnetic substance in the direction of the magnetic field, is subjected to a turn of the polarization plane of the order of 10^{-3} - 10^{-4} radian/cm oersted. M. I. Kaganov pointed out that in this connection yet another phenomenon may be observed, namely the resonance absorption of ultrasonics if the wavelength is equal to the radius of the Larmor orbit of the electron. . V. Various Questions. One of the most interesting lect...

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32190
S/196/61/000/010/004/037
E194/E155

AUTHORS: Sudovtsov, A.I., and Semenenko, Ye.Ye.

TITLE: The influence of domain structure on the electrical resistance of iron at low temperatures

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.10, 1961, 2, abstract 10B 7. (Symposium "The magnetic structure of ferromagnetics", Novosibirsk, Siberian Division AS USSR, 1960, 73-77)

TEXT: In ferromagnetic metals the electrical resistance depends on the orientation of the magnetic moment and on the dispersion of the electrons on domain boundaries. The resistance of iron was investigated at the following temperatures: room, liquid nitrogen, liquid hydrogen and liquid helium, with magnetisation by saturation. Samples tested were of very pure iron grown in the form of needles 0.1 mm wide and 38 mm long by distillation in vacuum; the grain size was approximately equal to the specimen diameter. The specimen was mounted in a glass capillary on which a ballistic coil was wound. Simultaneous measurements were made of the resistance and magnetisation of the specimens. The resistance

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The influence of domain structure ...

was measured with a low-resistance potentiometer type ППГН-1 (PPGN-1). Graphs are given of $\Delta R/R$ as a function of H ($\Delta R = R_h - R$), where R_h is the resistance value in the demagnetised condition and R the resistance in a magnetic field H at the temperature of measurement. The data obtained permit more accurate use of the method of assessing metal purity by its resistance at very low temperatures. In the case of ferromagnetics it is necessary to allow for the relationship between the resistance, the measuring current and the magnetic field; the purity of a ferromagnetic material can be assessed most accurately with minimum current and a field sufficient for magnetic saturation of the specimen. 7 literature references.

ASSOCIATION: Fiziko-tekhnich. in-t AN USSR, Khar'kov
(Physicotechnical Institute AS Ukr.SSR, Khar'kov)

[Abstractor's note: Complete translation.]

Card 2/2

LAZAREV, B.G.; SEMENENKO, Ye.Ye.; SUDOVTSOV, A.I.

Polymorphic transformations of lithium, sodium and potassium in films condensed on a cold base layer. Zhur. eksp. i teor. fiz. 39 no.4:1165-1166 O '60. (MIRA 13:11)

1. Khar'kovskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR.
(Lithium) (Sodium) (Potassium)

89205

24 5600 (1137 only)
24.2140 (1072, 1056, 1395)

S/056/61/040/001/011/037
B102/B204

AUTHORS: Lazarev, B. G., Semenenko, Ye. Ye., Sudovtsov, A. I.

TITLE: Modifications of beryllium and iron in films, condensed on a cold backing

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 1, 1961, 105-108

TEXT: It is well known that some metals, at least bismuth and beryllium, do not become superconductive in massive form down to 10^{-2} °K. In form of thin films condensed at low temperatures - and that at relatively high temperatures (Bi ~6°K, Be ~8°K) - they become, however, superconductive. The superconductivity of beryllium films and their temperature dependence were investigated in order to find out whether the occurrence of new modifications might be responsible for this effect. As e.g. in the case of iron a low-temperature polymorphism is known; also the electrical conductivity of Be films was studied. In this connection, parallel studies were carried out with Cu films which had no low-temperature polymorphism. The films were measured at 10^{-7} mm Hg in a helium cryostat. In the same device,

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also the temperature dependence (1.23-300°K) of electrical conductivity was measured; the heating rate of the films was 2°K/min. The beryllium films showed, as had already been found in preliminary investigations (Ref. 4) at ~30°K a polymorphic transition, and at 8-9°K superconductivity. The superconductive phase remains conserved when the film is heated up to 30°K. Within this range (8.5-30°K) the temperature dependence of the electrical resistance was studied; these experiments showed that only when heated to 60°K, the superconductive phase (R(T) = const) vanishes completely. As the nature of the film is known to depend on whether condensation occurred from the solid or from the liquid phase (in the former case the film consists mainly of diatomic molecules, and in the latter an atomic film forms) it was studied to what extent this produces any effect upon superconductive properties. Films were produced by slow evaporation (from solid Be) and by quick evaporation (from liquid Be) and R(T) was studied. The films of the first kind (condensed on N_2-cooled backings) most probably had a second superconductive modification, whose critical temperature was about 6°K and less, which, however, remained conserved up to 130°K. Also heating of the film to room temperature during 360 hr did not change anything in this effect: With cooling, superconductivity again occurred at

Modifications of beryllium ...

about 5°K. Fig. 4 shows the R(T)-curves of various Be films. The film condensed onto a helium-cooled backing from the solid phase was a mixture from two superconductive modifications. The first had a critical temperature of ~8.4°K (curve 1), remained conserved up to 30°K, and was completely vanished at 60°K; the critical temperature of the other modification was about ~6°K, and with short (1-2 hr) heating to room temperature (curves 3 and 3') this modification remained conserved; it was, however, considerably less stable than in the case of condensation to a nitrogen-cooled backing, but remained superconductive also up to about 130°. The study of an iron film, condensed on a helium-cooled backing showed that at 40°K a polymorphic transition occurs. A copper film produced on the same conditions, however, showed no such transition. The existence of one- or two low-temperature modifications is today known of the following metals: gallium (2), beryllium (2), bismuth (1), iron (1), sodium (1), lithium (1), and potassium (1). There are 6 figures and 9 references: 7 Soviet-bloc.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Institute of Physics and Technology of the Academy of Sciences Ukrainskaya SSR)

37104

S/056/62/042/004/016/037
B152/B102

24.5600
5.4900

AUTHORS: Semenenko, Ye. Ye., Sudovtsov, A. I.

TITLE: Some features of the temperature dependence of the electrical resistance of ferromagnetic metals at low temperatures

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 4, 1962, 1022-1026

TEXT: A term with linear temperature dependence was found in the equation $R = R(T)$ for iron and nickel in the liquid helium temperature range. Since this term decreases when a magnetic field is applied, it can be attributed to the scattering of the conduction electrons from spin waves. At helium temperatures $R_T/R_{0°C} = R_{0°K}/R_{0°C} + AT + BT^2$. $R_{0°K}/R_{0°C}$ is the residual resistance, A is non-zero only with ferromagnetic metals and describes the scattering from spin waves, B describes the electron-electron interaction. The degree of purity of the iron specimen was >99.99%, its diameter was ~0.1 mm, and its length 38 mm. Its residual resistance was $3.9606 \cdot 10^{-3}$. The grain size was approximately equal to the diameter. The terrestrial magnetic field was compensated. The resistance measurements were made with

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Some features of the temperature ...

the ППТН-1 (PPTN-1) compensator. Since the measuring current also changes the domains, the specimen was demagnetized after each measurement by a-c of decreasing amplitude. Between 1.23 and 4.2 the temperature dependence of the iron resistance is

$R_T/R_{0^\circ C} = 3.9606 \cdot 10^{-3} + 3.1 \cdot 10^{-6} T + 1.10 \cdot 10^{-6} T^2$. In a field of 850 oe $R_T/R_{0^\circ C} = 2.6058 \cdot 10^{-3} + 1.90 \cdot 10^{-6} T + 1.65 \cdot 10^{-6} T^2$. The residual resistance decreases, since scattering from the domain boundaries is impossible in the magnetic field. At liquid hydrogen temperatures (14-20°K), $R_T/R_{0^\circ C} = 3.9606 \cdot 10^{-3} + 1.64 \cdot 10^{-6} T^2 + 4.02 \cdot 10^{-11} T^5$. The last term describes the electron scattering from lattice vibrations which was not observed at helium temperatures. The scattering from spin waves, however, is no longer observed. For nickel, at 14-20°K: $R_T/R_{0^\circ C} = 10.0986 \cdot 10^{-3} + 2.88 \cdot 10^{-6} T^2 + 4.85 \cdot 10^{-11} T^5$. The temperature dependence of platinum can be described by a purely quadratic law. Between 14 and 20°K, as in iron and nickel, scattering from lattice vibrations setsin: $R_T/R_{0^\circ C} = 3.6486 \cdot 10^{-3} + 4.4 \cdot 10^{-6} T^2 + 8.23 \cdot 10^{-10} T^5$. Hence the electrical resistance of nonferromagnetic platinum shows no term dependent on linear temperature. B. G.

Card 2/3

Lazarev, M. I. Kaganov, and V. G. Bar'yakhtar are thanked for the discussion of the results. There are 3 figures. The English-language reference reads as follows: W. I. de Haas, I. H. de Boer, Physica, 1, 609, 1934; G. K. White, S. B. Woods, Phil. Trans. Roy. Soc., A 251, 273, 1959.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: November 28, 1961

S/056/62/042/006/012/047
B104/B102

AUTHORS: Semenenko, Ye. Ye., Sudovtsov, A. I., Shvets, A. D.

TITLE: Temperature dependence of the electrical resistivity of iron in the region of 0.38 to 4.2 °K

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 6, 1962, 1488 - 1489

TEXT: Temperatures were produced by pumping out He^3 vapor from the experimental apparatus by means of a carbon absorption pump. For a measuring current of 150 ma and with compensated earth field, the residual electrical resistance of the very pure iron specimen is given by $R(0°K)/R(0°C) = 3.9606 \cdot 10^{-3}$; $R(0°K) = 1.2595 \cdot 10^{-3}$ ohm. The voltages were measured to an accuracy of 10^{-8} volt by using a compensation circuit. The temperature was ascertained to an accuracy of 10^{-2} °K from the helium pressure. The temperature dependence of the resistance can be represented by $R = 3.9606 \cdot 10^{-3} + 3.1 \cdot 10^{-6} T + 1.1 \cdot 10^{-6} T^2$. The linear term in R(T) is

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Temperature dependence of the...

explained by an additional scattering of the conduction electrons by the spin waves. There is 1 figure.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: January 30, 1962

Card 2/2

SEMENENKO, YE. YE.

Dissertation defended for the degree of Candidate of Physicomathematical Sciences at the Institute of Metal Physics in 1962:

"Several Characteristics of the Electrical Resistance of Ferromagnetic Metals at Low Temperatures."

Vest. Akad. Nauk SSSR. No. 4, Moscow, 1963, pages 119-145

LAZAREV, B.G.; SEMENENKO, Ye.Ye.; SUDOVTSOV, A.I.

Critical magnetic fields of superconducting beryllium films.
Zhur. eksp. i teor. fiz. 45 no.2:391-392 Ag. '63. (MIRA 16:9)

1. Fiziko-tekhnicheskiy institut AN UkrSSR.
(Superconductivity) (Beryllium)

SEMENENKO, Ye.Ye.; SUDOVTSOV, A.I.; WOLKENSHTEYN, N.V.

Temperature variation of the electric resistance of cobalt in the region 1.3° to 4.2°K. Zhur. eksp. i teor. fiz. 45 no.5: 1387-1388 N '63. (MIRA 17:1)

1. Fiziko-tekhnicheskiy institut AN UkrSSR.

ACCESSION NR: AP4043622 S/0056/64/047/002/0486/0493

AUTHORS: Semenenko, Ye. Ye.; Sudovtsov, A. I.

TITLE: Effect of domain structure on the electric resistivity of iron, nickel, and cobalt at low temperatures

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 2, 1964, 486-493

TOPIC TAGS: electric resistivity, low temperature phenomenon, iron, nickel, cobalt, galvanomagnetic effect, domain structure, ferromagnetism

ABSTRACT: In view of the decrease in the electric resistivity of very pure iron when magnetized at low temperatures, previously observed by the authors (ZhETF, v. 35, 305, 1958), it would be expected that ferromagnetic metals experience an appreciable reduction in electric resistivity at low temperatures when magnetized to saturation. To check on this hypothesis, the authors measured the de-

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ACCESSION NR: AP4043622

pendence of the electric resistivity on a longitudinal magnetic field in iron, nickel, and cobalt, and on the transverse magnetic field in iron, at temperatures from room temperature to that of liquid helium. The results show an appreciable influence of the domain structure on the electric resistivity. The samples were mounted in a glass capillary on which a ballistic coil was wound, so that the basic form of the magnetization curve could be measured simultaneously with the electric resistance (the latter with the aid of a potentiometer). The measurements were made in the terrestrial magnetic field which was compensated to within 0.5% by Helmholtz coils. The effect of the domain structure was manifest in an increase in the electric resistivity when the samples were magnetized at low temperatures, and in an increase in resistivity when the measuring current through the sample was increased with the magnetic field compensated. The considerable reduction in the electric resistivity (~40% for pure iron) when the domain size becomes larger indicates that the conduction of electrons is strongly scat-

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ACCESSION NR: AP4043622

tered by the domain boundaries. An allowance for this effect is important in the determination of the purity of ferromagnetic materials from their residual electric resistance. "The authors thank B. G. Lazarev, M. I. Kaganov, and V. G. Bar'yakhtar for a discussion of the results and for interest in the work." Orig. art. has: 5 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk UkrSSR (Physicotechnical Institute, Academy of Sciences, UkrSSR)

SUBMITTED: 29Feb64 ENCL: 00

SUB CODE: MM, EM NR REF SOV: 005 OTHER: 007

Card 3/3

SEMENENKO, Ye.Ye.; SUDOVTSEV, A.I.

Effect of the domain structure on the electric resistance of iron, nickel and cobalt at low temperatures. Zhur. eksp. i teor. fiz. 47 no.2:486-493 Ag '64. (MIRA 17:10)

1. Fiziko-tekhnicheskiy institut AN UkrSSR.

L 14074-66 EWT(l)/EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) IJP(c) JD

ACC NR: AP6003242 SOURCE CODE: UR/0020/65/165/006/1275/1277

AUTHOR: Lazarev, B. G.; Semenenko, Ye. Ye.; Sudovtsov, A. I.; Kuz'menko, V. M.

ORG: Physicotechnical Institute, Academy of Sciences UkrSSR (Fiziko-tekhnicheskiy institut Akademii nauk SSSR)

TITLE: Maximum critical magnetic fields in superconducting metals

SOURCE: AN SSSR. Doklady, v. 165, no. 6, 1965, 1275-1277

TOPIC TAGS: critical magnetic field, indium, tin, thallium, superconductivity, crystal lattice distortion

ABSTRACT: Lattice distortions are used as a criterion for measuring the critical magnetic fields and temperatures in indium, tin and thallium specimens produced by condensation on a glass substrate cooled by liquid helium. The critical magnetic field in the longitudinal direction was determined from the normal electrical resistance of the specimens at this field intensity. The highest critical magnetic fields are observed in freshly precipitated specimens, where the lattice is most strongly distorted. The critical magnetic fields in well annealed specimens is close to that

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L 14074-66

ACC NR: AP6003242

of a conventional single crystal specimen. It was found that the maximum magnetic fields are independent of the thickness of the specimen. When the resistivity is high, the curves for critical magnetic field strength as a function of resistivity in indium are identical in form, showing saturation at a resistivity of $(5-6)\cdot10^{-6}$ $\Omega\cdot$cm (which corresponds to the mean free path of electrons, i.e. about 100 interatomic distances). Similar behavior was observed for the maximum critical field in tin. The critical field increases linearly in thallium and shows no tendency to saturation. The data indicate that a metal formed by condensation on an extremely cold substrate displays maximum distortion of the crystal lattice. Therefore the magnetic fields of $(20-25)\cdot10^3$ oersteds for indium and $(40-45)\cdot10^3$ oersteds for tin are the maximum fields for these metals. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: 06Sep65/ ORIG REF: 003/ OTH REF: 007

Card 2/2

L 27751-66 EWT(l)/EWT(m)/EWA(d)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6018704 SOURCE CODE: UR/0386/66/003/011/0443/0447

74
70
B

AUTHOR: Semenenko, Ye. Ye.

ORG: Physicotechnical Institute, Academy of Sciences Ukrainian SSR (Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR)

TITLE: Minimum electric resistivity of an antiferromagnetic metal (Cr)

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 11, 1966, 443-447

TOPIC TAGS: chromium, antiferromagnetic material, resistivity, impurity scattering, magnetic field, magnetic property, temperature dependence

ABSTRACT: The author reports observation of a minimum in the resistivity of a metal with magnetic ordering, such as chromium, in its antiferromagnetic state. This minimum is similar to that observed in many impurity-containing alloys and has been connected by many authors with the presence of a local magnetic field. The samples measured were of varying purity, and all had minima of resistivity below 15K. The minimum occurred at higher temperatures for samples with larger impurity content. Unlike other metals, however, the minimum did not disappear in a strong field on the order of 30 koe. This is attributed to the fact that the antiferromagnetic chromium has a very large internal magnetic field. A plot of the temperature dependence of the relative resistivity, which is assumed to be a measure of the impurity content, is a smooth curve similar to that obtained for gold. The author thanks A. I. Somov for supplying the pure chromium, L. S. Lazareva for supplying the superconducting

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L 27751-66

ACC NR: AP6018704

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solenoid, B. G. Lazarev and M. I. Kaganov for interest in the work and a discussion of the results, and A. I. Sudovtsov and V. M. Kuz'menko for help with the measurements. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 04Apr66/ ORIG REF: 005/ OTH REF: 005

Card 2/2

L 27656-66 EWT(l)/EWT(m)/EWA(d)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6018492 SOURCE CODE: UR/0020/65/165/006/1275/1277

AUTHOR: Lazarev, B. G. (Academician AN UkrSSR); Semenenko, Ye. Ye.; Sudovtsov, A. I.; Kuz'menko, V. M.

ORG: Physicotechnical Institute, AN UkrSSR (Fiziko-tekhnicheskiy institut AN UkrSSR)

TITLE: Maximum critical magnetic fields in superconducting metals

SOURCE: AN SSSR. Doklady, v. 165, no. 6, 1965, 1275-1277

TOPIC TAGS: critical magnetic field, crystal lattice distortion, superconductivity, tin, thallium, indium

ABSTRACT: The authors note that the most convenient way to verify current ideas about a linear relation between high critical magnetic fields H_c of massive superconductors and crystal lattice distortions and the mean free path of conducting electrons is to use metal specimens obtained by low-temperature condensation. The distortion standard can be the electric resistance of the specimen. This was the method used by the authors to measure the critical magnetic fields H_c and temperatures T_c for indium, tin, and thallium in a very wide range of lattice distortions. The present article reports on the results of these measurements. There is a detailed discussion of the findings for indium. Orig. art. has: 4 figures. [JPRS]

SUB CODE: 20 / SUBM DATE: 06Sep65 / ORIG REF: 008 / OTH REF: 007

Card 1/1 UDC: 537.312.62

L 35918-66 EWT(l)/EWT(m)/T/EWP(t)/ETI IJP(c) JD/GD

ACC NR: AT6015895 (N) SOURCE CODE: UR/0000/65/000/000/0018/0022

AUTHOR: Lazarev, B. G.; Semenenko, Ye. Ye.; Sudovtsov, A. I.; Kuz'menko, V. M.

ORG: Physicotechnical Institute, AN UkrSSR (Fiziko-tekhnicheskiy institut AN UkrSSR)

TITLE: Effect of the degree of ordering on the superconducting properties of metals

SOURCE: AN UkrSSR. Issledovaniye energeticheskogo spektra elektronov v metallakh (Study of the energy spectrum of electrons in metals). Kiev, Izd-vo Naukova dumka, 1965, 18-22

TOPIC TAGS: thallium, tin, superconductivity, temperature dependence, magnetic field measurement, resistivity

ABSTRACT: The dependence of temperature in critical magnetic fields (H_k) and resistivities was studied in 100 Å condensed films of Tl and Sn. Amorphous structures in the condensed films representing extreme departures from crystalline equilibrium were restored by annealing, whereby the effect of lattice order on free electron conductivity was exhibited. As-condensed films had the largest values of H_k when measured as a function of temperature from 4.2 to 1.5°K. Specimens annealed between 25 and 250°K had decreasing values of H_k. All curves obeyed the relation

$$H_\kappa = H_{\kappa_0}\left[1 - \left(\frac{T}{T_\kappa}\right)^2\right],$$

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L 46705-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG/GD

ACC NR: AT6020708 (N) SOURCE CODE: UR/0000/65/000/000/0097/0109

AUTHOR: Semenenko, Ye. Ye.; Sudovtsov, A. I.

ORG: none

TITLE: Polymorphism of metals in films obtained by low-temperature condensation

SOURCE: AN UkrSSR. Fizika metallicheskikh plenok (Physics of metal films). Kiev, Naukova dumka, 1965, 97-109

TOPIC TAGS: metal film, low temperature research, phase transition, superconductivity, temperature dependence, resistivity

ABSTRACT: The authors report results of an investigation of low-temperature polymorphism of metals by low-temperature deformation of the metal in a strongly supercooled state. The metals tested were Cu, Li, Na, K, Be, Bi, and Fe. The metal films were condensed under various conditions on a surface cooled to 4.2 - 80K, and their characteristics were measured with specially developed apparatus (Fig. 1). The measurements consisted of determining the temperature dependence of the resistivity, the time variation of the resistivity after condensation, and determination of the point of destruction of superconductivity. The tests showed that metal films deposited on very cold substrates have a very highly distorted structure. In some cases the distortion is sufficient to produce a second modification of the metal. The phase-transition temperatures coincide with polymorphic-transformation temperatures obtained by other methods. In some cases (Be, Bi), the second modification exhibits supercon-

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L 46705-66

ACC NR: AT6020708

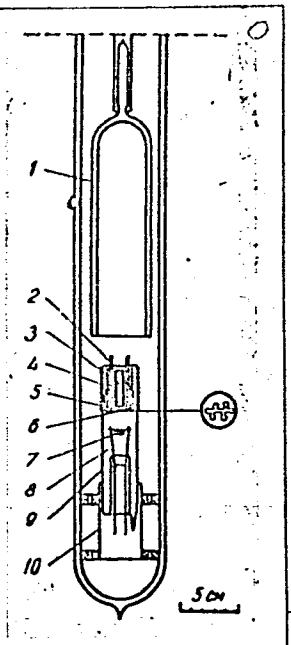

Fig. 1. Instrument for production of films and for measurement of their electric conductivity: 1 - Cap in form of Dewar, 2 - resistance-measurement leads, 3 - resistance thermometer, 4 - heater, 5 - glass substrate, 6 - screen, 7 - metal to be evaporated, 8 - evaporator, 9 - glass vial, 10 - mount for centering vial.

ductivity, although the basic modification does not. It is deduced that low-temperature condensation of the films leads to a metal with the closest-packing structure, of the same type as obtained under high pressure. Orig. art. has: 11 figures.

SUB CODE: 20/ SUBM DATE: 30Oct64/ ORIG REF: 010/ OTH REF: 006

Card 2/2

SEMENENKO, Yu.

Scientific-technical session of the All-Union Petroleum Research Institut on Safety Engineering. Bezop.truda v prom. 6 no.11:38-39 N '62. (MIRA 16:2)

(Oil fields--Safety measures)

SEMENENKO, Yu.F.

Pyogram in various phases of odontogenic inflammatory diseases. Vrach. delo no.1:83-85 '59. (MIRA 12:4)

1. Oposhnyanskaya rayonnaya bol'nitsa Poltavskoy oblasti i kafedra khirurgicheskoy stomatologii (zav. - dots. M.F. Datsenko) Khar'kovskogo meditsinskogo stomatologicheskogo instituta (nauchnyy rukovoditel' raboty - dots. V.I. Korobkov).
(SUPPURATION) (JAWS—DISEASES)

SEMENENKO, Yu.F.

Intramuscular injection of penicillin in acute suppurative odontogenic diseases of the maxillofacial region. Vrach.delo no.3: 279-281 Mr '60. (MIRA 13:6)

1. Kafedra khirurgicheskoy stomatologii (zav. - prof. N.V. Fetisov) Kiyevskogo meditsinskogo instituta.
(PENICILLIN) (JAWS--DISEASES)

SEMENENKO, Yu.F

SEMENENKO, Yu.F.

Change in the reactivity of the organism during penicillin treatment of acute suppurative processes in the maxillofacial region. Probl. stom. 5:281-285 '60. (MIRA 15:2)

1. Kiyevskiy meditsinskiy institut.
(PENICILLIN) (JAWS--ABSCESSES)

SEMENENKO, Yu.F.

Physical therapy methods in the complex treatment of acute suppurative diseases of the maxillofacial region. Vrach.delo no.6:611-614 Je '60. (MIRA 13:7)

1. Kafedra khirurgicheskoy stomatologii (zav. - prof. N.V. Fetisov) Kiyevskogo meditsinskogo instituta.
(JAWS--DISEASES) (PHYSICAL THERAPY)

SEMENENKO, Yu.F.

Use of bitsillin 3 in the compound treatment of acute suppurative diseases of the maxillofacial region. Stomatologiia 40 no.1:65-69 Ja-F '61. (MIRA 14:5)

1. Iz kafedry khirurgicheskoy stomatologii (zav. - prof. N.V.Fetisov) Kiyevskogo meditsinskogo instituta imeni akad.A.A.Bogomol'tsa (direktor - dotsent V.D.Bratus').
(JAWS--DISEASES) (PENCILLIN)

SEMENENKO, Yu.F.

Clinical significance of penicillin sensitivity of microflora in the focus of acute suppurative inflammation of the maxillofacial region. Nov. khir. arkh. no.12:35 D '61. (MIRA 14:12)

1. Kafedra khirurgicheskoy stomatologii (zav. - prof. N.V.Fetisov) Kiyevskogo meditsinskogo instituta i bakteriologicheskaya laboratoriya (zav. - nauchnyy sotrudnik A.I.Likhacheva) Ukrainskogo tsentral'nogo nauchno-issledovatel'skogo instituta ortopedii i travmatologii.
(PENICILLIN) (JAWS--INFLAMMATION)

SEMENENKO, Yu.L., inzhener.

Stresses during the cold straightening of metal products on roller straightening machines. Vest.mash. 33 no.4:26-33 Ap '53. (MLRA 6:5)
(Strains and stresses)

ACC NR: AP7000020 SOURCE CODE: UR/0080/66/039/011/2571/2573

AUTHOR: Astashov, N. N.; Semenkovich, S. A.

ORG: none

TITLE: Refining of bismuth by chlorination and iodination

SOURCE: Zhurnal prikladnoy khimii, v. 39, no. 11, 1966, 2571-2573

TOPIC TAGS: bismuth, metal purification, chlorination, iodination

ABSTRACT: Technical grade bismuth produced by the Chimkent lead plant contains no more than the following amounts of chief impurities (%): Ag 0.5, Pb 3.5, Cu 0.15, Fe 0.01, Fe+As 0.001, Sb 0.1%. In the first stage of refining (treatment with chlorine), all these impurities except silver and copper are eliminated. Subsequent treatment with iodine vapor removes the copper and markedly reduces the silver content of bismuth. The metal obtained is saturated with halides (BiCl, BiI) and is therefore treated in a vacuum with a KCl-NaCl mixture with an oxidant (KNO_2); the Bi content is thus raised to 99.99%. The physicochemical principles of the refining process, which is based on the volatilization of chlorides and iodides formed by the impurities, are discussed in terms of the free energy values of the chlorides and iodides of the various metal impurities. The proposed method is extremely simple, reliable and rapid (10-20 minutes), and the consumption of chlorine and iodine is

Card 1/2 UDC: 669.054.1

ACC NR: AP7000020

low. Orig. art. has: 1 figure and 3 tables.

SUB CODE: 07/ SUBM DATE: 30Oct64/ OTH REF: 002

Card 2/2

SEMENKOVICH, S.A.

Thermodynamic potential and the width of the forbidden zone of semiconducting compounds. Dokl. AN SSSR 158 no.2:442-445 S '64.
(MIRA 17:10)

1. Institut poluprovodnikov AN SSSR. Predstavleno akademikom N.N. Semenovym.

CIORASCU, F.; CRAMARIUC, R.; CROITORU, M.; CROITORU, P.; IONESCU, D.
SEMENESCU, G.

Electrostatic generator with band. Studii cerc fiz 11 no.4:1033-1041
'60. (EEAI 10:8)

1. Institutul de fizica atomica, Bucuresti. 2.Comitetul de redactie, Studii si cercetari de fizica, redactor responsabil adjunct (for Ciorascu).
(Electrostatic generators)

S/081/62/000/002/043/107
B151/B108

AUTHORS: Semenescu, G., Ionescu, D. R.

TITLE: An apparatus for obtaining pure hydrogen

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1962, 176, abstract 2Ye77 (Studii şi cercetări fiz. Acad. RPR, v. 12, no. 1, 1961, 75 - 78)

TEXT: An arrangement for automatic electrolysis to obtain H_2 used in ion sources is described. The purification of the H_2 obtained is carried out by passing it through a heated Pd diaphragm. [Abstracter's note: Complete translation.]

Card 1/1

SEMENESCU, Gh.

Processes taking place during the passage of the beams of hydrogen ions and atoms through gases. Studii cerc fiz 11 no.1:197-209 '60. (EEAI 10:1)

(Hydrogen) (Ions) (Atoms)
(Electric discharges through gases)